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THE time seems to have fully arrived for some prompt and decisive action to be taken by the architects of the country with reference to the Washington Monument. It now appears that the Board of Army Engineers, composed of Gens. Gillmore and Duane and Col. Kurtz, have reported to the Monument Association a scheme for such a strengthening of its foundations as will enable it to bear the whole four or five hundred feet of brutal and inexpressive mass according to the original design. We also learn that Gen. Meigs on the 5th inst. submitted to the Association a plan to terminate the present structure with a metallic spire 140 feet in height, making a total height of 315 feet and "resembling the tower in the Public Square of Vienna." The additional weight, it is said, would be 4,147,000 pounds. If it is St. Stephen's which is to be the prototype of this new development, the ecclesiastical German Gothic of the fifteenth century will hardly recognize itself in this queer disguise and in this new place, and will find itself put to strange uses in serving as a memorial to the American republican hero of the eighteenth. Another plan under consideration by the Association is that of Mr. Larkin G. Mead, who would place upon the colossal stump a statue of Washington, 85 feet in height, made of thin hammered metal. We would not speak lightly or without due respect either of the military engineer who would crown a bare truncated stone obelisk 175 feet high with a light metallic spire of inferior height, and dedicate the inexpressible combination to the Father of his Country as an object of art fitted by peculiar grace and purity of design to indicate the love and veneration of a great people; or of the sculptor who would finish the broken shaft with a figure 20 feet taller even than the "Bavaria" of Schwanthaler, which is obliged to be content with a pedestal only 30 feet high. But we venture to submit as architects and citizens — not as geniuses — that neither the original project nor its modifications, so far as we know them, should be presented to the world as the homage of the best American art to the best American patriotism.

WE most earnestly protest that the realization of any one of these schemes would more than counterbalance the reputation we have earned at Philadelphia, as a people striving bravely in the midst of strenuous toil for an expression in art worthy of our civilization. The building of this monument to Washington in the national capital is an undertaking so conspicuous and so deliberate that it will be accepted by the world as a type of our best progress. Let us compare this monstrous obelisk, so cheap to design but so costly to execute, so poor in thought but so ostentatious in size, or any of its known modifications, which we forbear to criticise because they cannot be seriously considered, — let us compare these with the works of art raised by other nations to commemorate their lesser Washingtons: the parallel certainly is startling. Our capacity to meet this emergency with at least a respectable show of art is patent to all. The propositions submitted are not representative; and we commend to the architects of the country — to the Trustees of the American Institute of Architects in particular — respectfully to urge the Monument Association to select some distinguished member or members of the profession to advise with them, or, with their assistance, to prepare a definite programme of requirements, with the necessary limitations carefully formulated, and open the whole subject anew to competition. The subject is one which, if properly presented, would call forth the best art which the country can produce, and the architects would respond to the call with an enthusiasm worthy of the theme. We venture to say that the Institute could readily prepare a scheme for such a competition consistent with the dignity of art and with the importance of the occasion, and equally acceptable to the committee and the profession. We believe the programme of requirements, in any such competition, need not necessarily exclude the recognition of the present unfinished monument as a basis on or around which the new work might be built as a completion of the original idea, though in a direction far different, we hope, from that intended by the author.

As nearly as we can remember, Mr. Winthrop's speech, delivered on laying the corner-stone of the National Monument to Washington, contained these eloquent words: "Build it to the skies — you cannot outreach the loftiness of his principles; found it upon the massive and eternal rock — you cannot make it more enduring than his fame; build it of the whitest Parian marble — you cannot make it purer than his life;" to which we venture to add, in the same strain: but build it as a work of engineering, and not as a work of art; build it without the most costly expenditure of human thought upon its outlines and of human love upon its detail — instead of honoring his memory you will insult it; instead of honoring yourselves in honoring him, civilization will reject your poor offering as far too poor to express the sentiments of a great people.

WE are tempted to exclaim, How slow are *all* English-speaking people to comprehend the true service which art can render them! Here is a typical case from the British Empire: Lord Lytton, Governor-general of India, has sent Capt. Cole, R.E., to England, on full pay, for eighteen months, that he may study architecture in order to be able to make a design for his new house at Simla. Meanwhile there are educated and experienced architects in India, who for want of employment, we are told, are obliged to turn railway contractors and builders to obtain a living. The English professional journals occasionally present us with designs erected by architects in India of sufficient merit to demand better recognition than this. This case would be unimportant if it were not representative. In France or Germany the culture of art rests upon a basis too broad and firm to allow such distrust of the artist. It is reserved for Anglo-Saxon governors and capital to distribute their art patronage among military engineers, female dilettanti, relatives in need, political supporters, and other dabblers in design, who rashly originate because they do not know what to copy, or badly copy because they cannot originate.

THE question as to the proper manner of decorating the interior of St. Paul's Cathedral has been revived, and is again a matter of discussion among the amateurs and critics of London. The subscription for this object now amounts to about $200,000. It will be remembered that the project of Mr. Burges, prepared under the direction of the committee three years ago, met with such general condemnation that it had to be abandoned. His proposition, as we remember it, involved a complete and very learned ecclesiastical iconography, covering the dome, the vaulting, and the upper part of the walls with a succession of pictures in encaustic or mosaic, assuming to set forth the complete celestial hierarchy, dominating over the typical personages of the Old and New Testaments, and over the holy army of saints, martyrs, and doctors connected with the history of the Christian Church; the piers and lower part of the walls he proposed to cover with a veneering of marbles in the Florentine manner. It seems, however, that Mr. Burges, in this very imposing composition, labored under the peculiar embarrassment, not only of his own strong Gothic predilec-

tions, but of certain restrictions laid upon him by the committee; and it is probable that, under the circumstances, no other living architect would have had much better success. And now Mr. Edmund Oldfield, a member of "the executive committee for the completion of St. Paul's," dissatisfied that so far their labors have produced no practical result, writes a letter in the form of a treatise on the subject, to the Dean and Chapter, which appears unintentionally to explain how instructions emanating from a committee of conscientious amateurs may, in themselves, prove a serious obstacle to this great undertaking.

To instruct himself in his new duties, Mr. Oldfield, as we once stated (p. 10), has visited and examined many Renaissance churches in North Italy and Rome, and from these draws the conclusion that colored decorations should be divided into panels adjusted to the forms of the surfaces to be treated; an excellent result of his costly researches, but one which assuredly might have been more promptly reached by applying to the nearest competent architect. As to the practical application of the information thus laboriously obtained, he proposes, not of course to employ an architect or a competition of architects, but a competition of painters, who, however well selected, must, in the nature of the case, when turning to such a new field of thought, themselves act as amateurs under amateurs, and be subject to all the vicissitudes of inexperience. If there exists anywhere an art-education competent to deal with a subject so difficult and so unusual, it must be among those whose life has been spent in the study of architectural forms, and of the effect of color upon such forms. It is a subject requiring for its proper comprehension a life-discipline, such as the education of modern English painters has not furnished them withal. No civilized people, outside of the Anglo-Saxon race, need to be informed that proper architectural direction is the only guide which will lead to success in such undertakings. Not to recognize the architect in such an emergency, is an act of supreme Philistinism.

OUR country has enjoyed, and, as is now well recognized, hitherto mostly misused, unprecedented opportunities for the laying out and planning of new cities and towns. These, instead of following the usual course of municipal history in the Old World, and developing accidentally in various directions by slow accretions and imperceptible growths, have sprung into existence full-armed on a mathematical basis of uniform parallel streets, crossed generally at right angles by parallel avenues, without regard to considerations of aspect, the natural dispositions of surface, the geographical distribution of the land, and the location of public buildings. Sir Christopher Wren, after the London fire, seems to have been the first to give this subject scientific attention; and his well-known plan for the reconstruction of the city, involving the intelligent idea of streets radiating from great public centres where all the public buildings should be placed, if it had been carried out, would doubtless have gone far to make modern London the most beautiful city in the world. Some of the essential features of this idea are contained in the plan of the city of Washington, which subordinates to a certain extent the direction of the streets to the locations of the principal monuments. But the Department of Parks in the city of New York, which has been intrusted with the preparation of a plan for the laying out of the beautiful suburbs north of Manhattan Island, viz., Morrisania, West Farms, and Kingsbury, which have lately been included within the municipal limits, seems to have recognized several points which up to this time have not had their due influence in the laying out of towns. It has submitted a scheme for such an enlargement of the city in this direction as shall properly avail itself of all the agreeable diversities of surface, the natural highlands being reserved for dwellings, and the more level regions bordering the Harlem and Hudson Rivers, and in the vicinity of the great railways running north and east from the metropolis, being set apart for traffic and manufactories. According to this system, the streets adjust themselves to the surfaces by curves and picturesque windings, admirably adapted to the most effective display of architecture and to the most rational drainage, avoiding steep grades anywhere, and any grade where traffic is likely to encumber them. The scheme also contemplates what appears to be a very admirable extension of the rapid-transit system of New York, by means of which these new outlying wards will be rendered easily accessible from the present centres of business. This project seems to be consistent not only with the demands of health, convenience, and art, but of economy also, for it avoids that indiscriminate levelling and costly grading of surfaces by which the natural beauty of our towns has been diminished, and their natural debt materially increased.

THE NATURE OF AN ARCHITECT'S COMPENSATION.

WHEREVER the architect's profession is new, or where its customs are not clearly understood, there is apt to be a good deal of quarrelling about his proper compensation. In our own country especially, in the rawness of the profession, clients fail to see the meaning and reason of their architects' reasonable charges; and even architects, from having neglected to examine the usage on which they are based, are sometimes unable to give a satisfactory warrant for them. These difficulties come oftenest from a confusion of an architect's relation to his client with other more purely commercial relations, and from the disposition to apply to his work methods of payment which belong to other kinds of work which are more familiar.

The architect's payment might of course be based on some computation of the amount of work he does, on the time his work takes, for instance; that is, he might be paid wages. Or he might be paid on the commercial principle of a tax or commission on the cost of each of the various items of material and labor which pass under his supervision. This is the principle on which it is very commonly taken for granted that he is to be paid; but, as will presently appear, it is not that which is at the bottom of the existing usage, although the rough method of compensation which is adopted seems to imply it, and thereby leads many persons into a wrong view of the case. To apply either of these principles with the precision which alone would justify making them the rule of compensation, would involve a system of charges very minute and of laborious application as well as difficult to adjust, so much so as probably to prove impracticable for common use, and at any rate very different from that which is actually employed.

According to the system of payment which has grown up throughout Christendom, and which is substantially the same in the usage of all the countries where architecture is established as a profession, the architect's compensation is grounded, like that of a lawyer or a salaried official, not on computation of the amount of work he performs, nor on an exact account of the materials and labor over which he has charge, but on a general estimate of the value of his service to his employer. The system of percentages is used merely as a rough but convenient method of estimating the importance of this service. He stands in the position of a confidential agent who undertakes a certain important charge, fixing the price of his services according to its apparent importance, and assuming the risk himself of the amount of labor it will require of him, — an amount which, in its proportion to the amount of his fee, varies widely in different cases. This is the principle on which all salaried persons are paid, — clergymen, clerks, public officials, for example, — only, since the position of an architect is not permanent nor periodical, his payment is not a yearly or monthly stipend, but a sum which is determined by an estimate of the importance of the piece of work for which he is engaged. We took some pains to illustrate in our last editorial the peculiar and confidential nature of an architect's duty to his client. One of our objects in doing so was to show how, by common instinct as it were, the nature of his recompense is adapted to it, and how both are distinguished in kind from the service and the recompense of a commercial relation.

It has been concluded, from the experience of several generations in various countries, that one-twentieth of the cost of a building is in ordinary cases a fair allowance for the importance of the service of planning, designing, and supervising it, and that though the labor involved is quite irregularly proportioned to this compensation, yet in the long average the practitioner gets reasonably rewarded. There are particular kinds of work, to be sure, for which this fee of one-

twentieth the cost is obviously insufficient. Such are the designing of inside finish, furniture, or other decorative or monumental work, or of repairs to old buildings. When this service occurs, not as part of a general charge in which it is to be included, but as a thing to be separately accounted for, it is usual to expect a fee of from ten to fifteen per cent; but this exception only confirms the accepted understanding of the usual fee, which is a round sum for a round service, and is understood to be computed upon the whole cost of the work, every item included, up to the time when the architect's connection with it ceases.

Many people look with an instinctive preference for a plan that will adapt the compensation more directly to the labor performed, and there is a common idea that such a system would be more rational. But of the labor in this case, as we have said, it is very difficult to make any tolerably accurate computation, complicated and various as it is: it would be still more difficult to exhibit it in any way that would satisfy the exigence of a suspicious client; but of the importance of it there is a tolerably exact and an easily applied and indisputable measure, in its cost. Without stopping to go farther into the pros and cons of this method or another, it is enough to say that in a large view of the public convenience the chief desideratum is some system of payment which, while it on the whole allows a substantial equivalent for the service rendered, shall be of easy application, not inconveniently complicated, nor dependent on elaborate compensations which the client cannot follow out and justify, but clearly understood by him, and reducing the occasions for bickering as much as possible. Such a system is that which actually obtains, of payment by a gross percentage, fixing a round sum based upon data in the client's own possession, suiting with the confidential and necessarily rather undefinable nature of the architect's service, and not attempting to take accurate account of the multitude of small labors into which it would be difficult for him to enter, and impossible for the client to follow him.

The sum is, we say, a round one, meant to cover on the whole the entire service rendered, but not to be separated, except in certain largely defined divisions, into parts corresponding to the various labors that make up the service. For convenience in the cases where the architect may have occasion to stop his work at certain conspicuous points, his five per cent is divided into parts assigned to its chief stages: one per cent for preliminary sketches, two and one-half per cent when full plans and specifications are made, three and a half with full detailed drawings, and five with superintendence. But these, like the whole fee, are gross sums estimated for convenience' sake and not for accuracy of compensation. The whole fee is not understood — and here is the key to a good many misconceptions — to be made up of small sums corresponding to the various acts of service or the parts of the work on which it is computed. The whole five per cent does not at all mean five per cent on the cellar, five per cent on the walls, five per cent each on the roof and the outside finish, on the doors and the chimney-pieces, on the stairs and wainscoting, on the stone, the brick, the timber, and the mortar. All these items must be counted in to get at the cost of the house, and so estimate the importance of the duty performed and its recompense; but to assign each part its proportional share of the compensation is entirely beside the mark. If this were to be done, an elaborate and varied scale of compensation would have to be arranged. The cellar and walls might not call for more than two per cent; the chimney-pieces and the stairs ought to have as much as fifteen. Twenty-five dollars, for instance, would be a ridiculous compensation for the designing and drawing of a staircase that cost five hundred; and there are certain kinds of work which it absolutely costs more to design than to execute. Or for the rough materials and coarse work for which a comparatively rapid inspection is sufficient, a small fee would be adequate; while the work of finishing, and certain critical mechanical operations which require very careful watching and minute directions, would call for a much larger one. That the fee is not susceptible of such subdivision is clear, even from the way the various payments for the different stages of the work are assigned. Thus when two and one-half per cent is assigned for general drawings and specifications, the mass of the work, its body and substance, is provided for. The making of detailed drawings, for which one per cent is allowed, is almost confined to designing minutely the outside and inside finish; and for the work done on these, ten or twelve per cent on their cost, which is often not a great part of that of the building, would not be too much. But the percentage is levied on the whole house, as much on the parts that have been substantially provided for by the general plans, as on those for which the details are a special study; and the small rate levied on a large amount of work with most of which the immediate service has really nothing at all to do is expected to give in the average an equivalent for the labor required.

From these general principles on which the architect's compensation is grounded, there follow certain inferences which are to many persons very unexpected, and which, from want of consideration, are often vehemently disputed. Since it is his duty simply to undertake the general responsibility and whatever labor may be required in designing and overseeing a building, and to take his pay in a sum computed on the whole cost, that is, the whole value, of the house, it makes no difference whatever whether he has actually expended labor on all the individual items that enter into its cost or not, nor whether all of the materials used have been provided for that express purpose or not. Some clients take it for granted that in summing up the cost for computing the architect's commission, if there is any thing in their buildings which was not of his design, or did not pass under his direct supervision, it should be omitted in the computation. If, for instance, the proprietor has selected a furnace or a range, or picked out a chimney-piece to insert, or ordered gas fixtures, or one and another small alteration, of his own motion; or if from personal interest or preference he chooses to perform himself some of the details of the architect's duties, these things do not exempt any thing from computation, or alter the general bearing of the professional claim. The architect has assumed to furnish all the labor the case requires, be it more or less: the client, on his part, has undertaken to pay him according to the value of his house. It is not in the understanding that the architect should shirk any unexpected care that the work may lay upon him, nor that his client should take advantage of any particular point at which his services may not have been required to abate his compensation, which is general and not particular. In the same way, if the client has already in his possession material which he uses in the architect's design, and for which, therefore, he pays nothing in connection with his building — if he makes his own brick or has his own lumber on hand — the value of these must be counted in computing the fee. For the architect is not paid a separate commission on the purchase of the materials used in the building; and the fact that the proprietor has them on hand takes nothing from the value of his whole service, nor even from his labor. It would be obviously unfair, in fact, if a brick-maker or a carpenter, by virtue of having materials on hand, could command the services of an architect at a less price than another person. There is good reason for saying, indeed, that the term "architect's commission" is a misnomer which produces misunderstanding and trouble, and that it would be better that his compensation were called by another name. It is not a commission at all in the ordinary business sense; that is, it is not a toll levied on the various items of material and labor which enter into his work. It is merely a definite fraction of a gross amount; and the items are accounted not for their significance as items, but merely as a means of getting at the gross amount. It would be well, we think, if this misleading name could be given up, since it carries in common business parlance a meaning which is at variance with the real nature of the compensation, and "fee," or some other unequivocal term, be substituted.

We are not here, be it understood, pleading the cause of one system of payment against another. We have incidentally mentioned some of the considerations which commend the existing system; and there are others, which it may be well to suggest at another time. We have aimed simply to illustrate its nature, and to point out one or two of the misunderstandings to which it has been subjected, because it is the existing one, — a better one on the whole, we think, than any of the substitutes that have been suggested, but, at all events, the only one that does exist, the world over. It is the one that is explained in the circular of the American Institute which we had occasion to print a few weeks ago (No. 75). It is the one recorded in the official announce-

ments of European architectural societies. It is sustained by the decisions of many European courts, and doubtless American ones, though unfortunately American decisions in architectural disputes have seldom been put on the official records. It is not the only possible system, nor the only one that has been advocated; but it is the only one which usage has established. In our opinion, it is better than any substitute that has been suggested; at any rate, it has the advantage of being simple, clear, easily understood and applied by the client who makes the payment, and when once comprehended, as little liable to dispute in its application as any system is likely to be.

STUDIES OF INTERIOR DECORATION.

XIII.

IN our previous study we indicated by a monumental example how a purely architectural effect on a comparatively large scale is to be obtained by the use of color: in other words, we presented a problem of architecture in which color was used not merely as a decoration, — not merely as an explanation or supplement of the form, — but as an indispensable necessity of the design.

Perhaps our readers scarcely need to be reminded that in every great era, form and color have been considered equally essential to expression in art. The Greek of antiquity, to whom we instinctively refer for instruction, refined the details of that simple combination of posts and lintels which constituted his buildings, until finally he reached a point of perfection beyond which his perceptions apparently could not carry him. He was thus enabled in a manner to establish a formula, a model, a standard of pure architecture, which, in his mind, had the force of a law; and it was called an *order*. But when he discovered that his order, in certain effects of light and at certain distances, lost its purity of expression; when he saw that the shadows thrown by his columns upon the wall of the *cella* behind were strong enough to confuse his peristyle, and those thrown by his cornice, to overcome the precious details of his frieze, — he found it necessary to revive the traditions of earlier forms of art, and to complete his form with color for the sake of securing and maintaining the perfection of his architectural thought under all circumstances.

Therefore he painted the wall behind his colonnade with a dark red, in which his columns nearly lost their shadows, and against which their form was sharply defined; and he separated his metopes from his triglyphs by a treatment of positive red and blue respectively, so that the shadow of his cornice could conceal no detail essential to the design. In like manner, he drew certain horizontal lines of buff on the red wall behind his peristyle, to recall the effect of masonry, and by contrast of direction to enhance the vertical effect of his fluted shafts; or he divided the red wall into panels with rich styles of green, brown, or black, and, with his simple scale of color, so treated the minor details of his entablature as to intensify the expression of their several functions, to prevent the masses of color from predominating over the proper effect of form, and by recurrence in lines upon fillets, or in small broken quantities upon mouldings, to soften the transition between the applied colors and the natural whiteness of the marble.

It is certain, also, that the Greek set the statue of the god within the temple against a background very highly enriched with decorative and subject painting. It would be useless here to recapitulate the proofs gathered together by Hittorff in support of this proposition. They are sufficiently numerous and sufficiently strong to leave no question of doubt upon this point. Indeed, without proof by example, it is evident that architectural effects dependent on modelling by reflected or diffused light, as in interiors, must receive even more efficient aid from color than on the exterior, where they have all the obvious advantages of direct light.

Modern critics were not prone to accept the idea of polychromy as applied to Greek architecture, because they could not appreciate its necessity. But the fact is no longer to be disputed; and whether we can appreciate its meaning or not, whether in this the Greeks followed their ancient traditions, as Hittorff implies, or proceeded by invention to fulfil a necessity of design, as Viollet-le-Duc conjectures, we must needs accept it, not as a mere superfluous decoration, but as *a completion of the architecture*. To the Greeks art in all its forms was a matter far too serious to be trifled with. The very essence of the Greek spirit was deliberation, reserve, and self-denial. It is impossible, therefore, for any one who, by study, has made himself familiar with those characteristics, to conceive of Greek architecture of the purest time admitting any form of caprice, whether of shape or color.

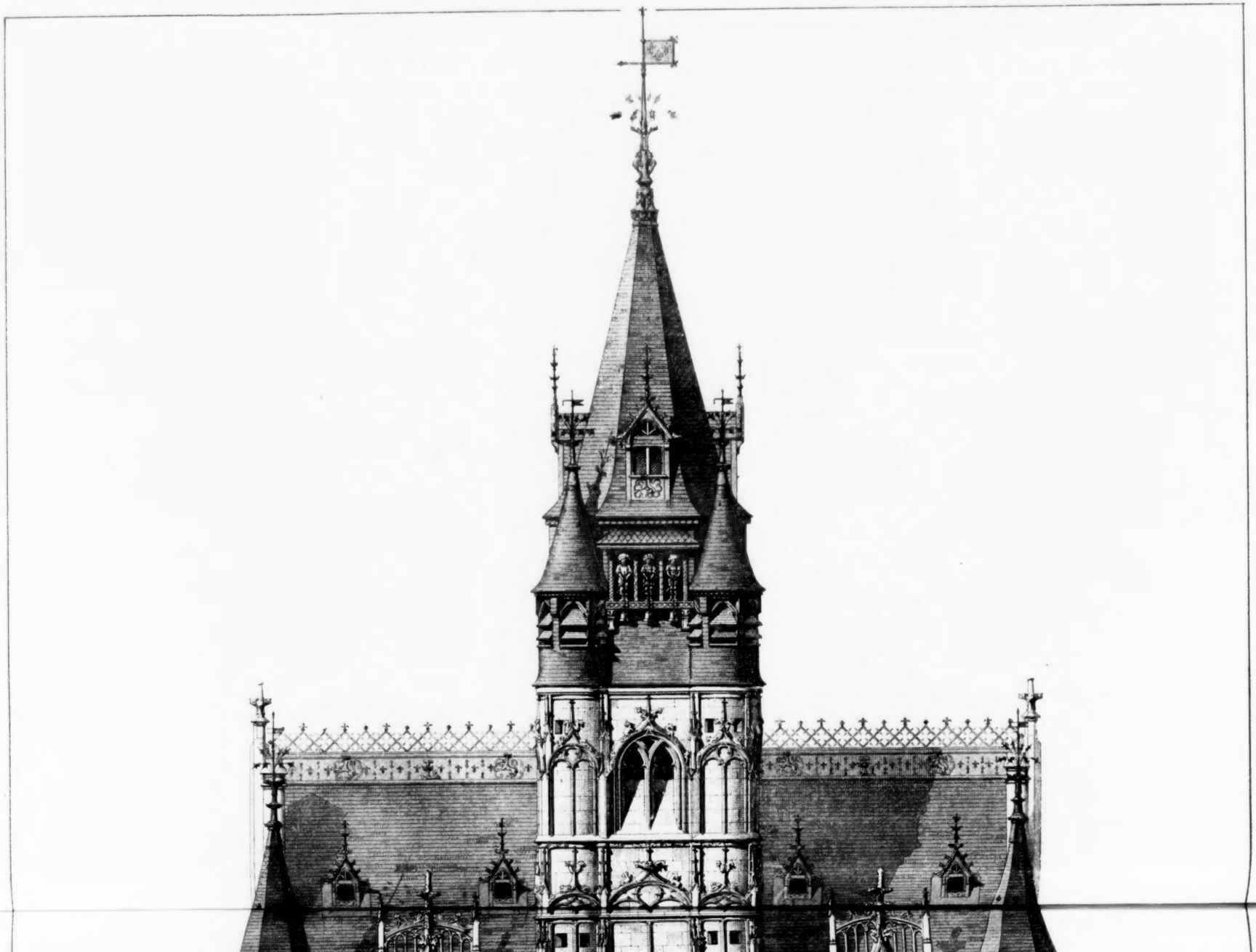
In like manner the lay architects of the thirteenth century found that their interiors, although illuminated with many-hued light from their painted windows (or perhaps because so illuminated), required the element of applied color to define their details and obtain the full value of their architectural forms. The mediæval theory and practice, in this respect, both as regards ecclesiastic and domestic interiors, are set forth at great length by M. Viollet-le-Duc in his article *Peinture*, in the *Dictionnaire Raisonné*. Indeed, as to this subject, we are aware of no more competent authority, no more lucid or exhaustive exposition.

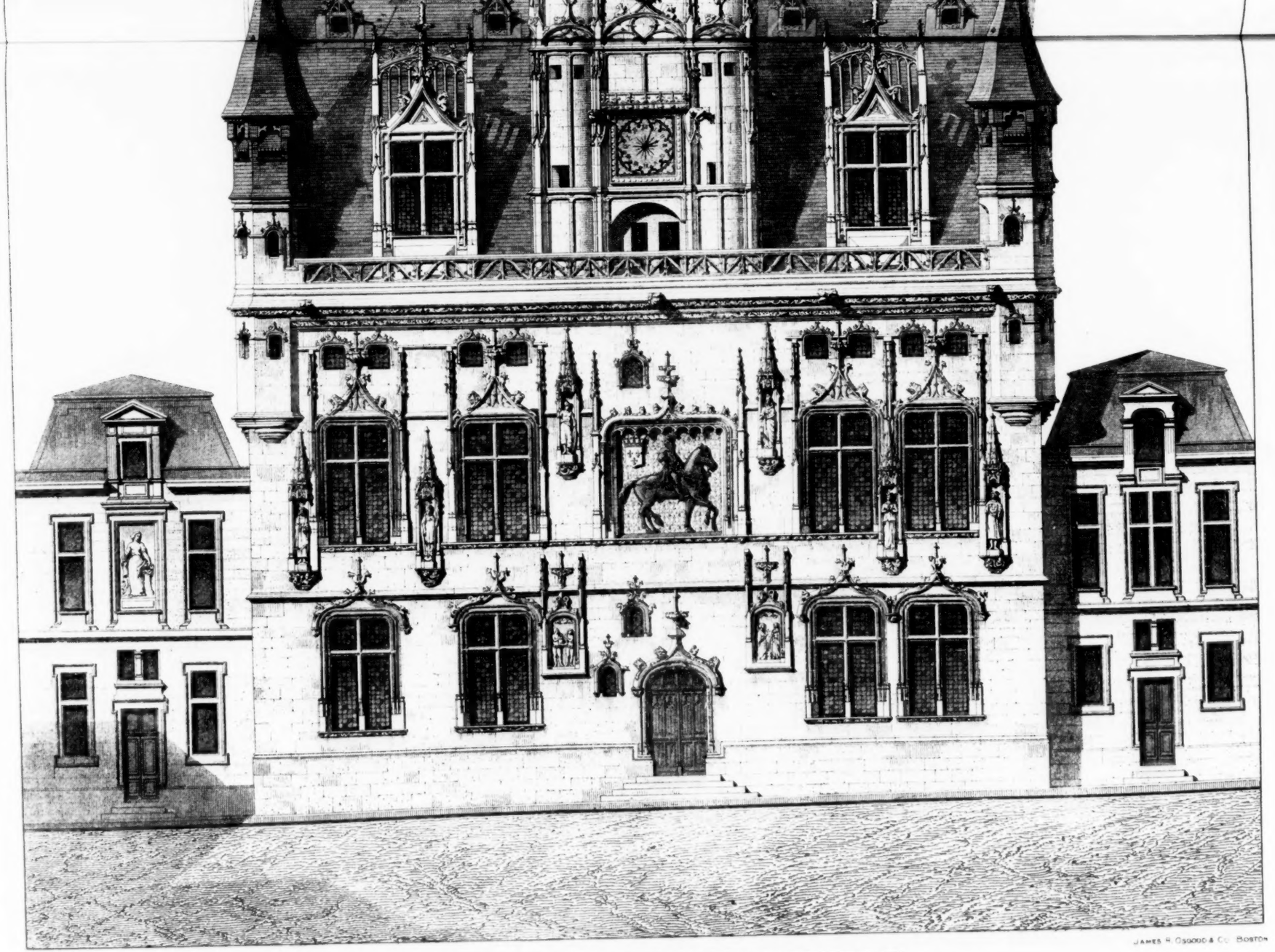
"Of all the appliances essential to the production of architectural effects, decorative painting," he says, "is especially difficult, because of the impossibility of laying down general rules in regard to it equally applicable to all the emergencies of design. But practically it is certain that according to the manner in which it is used in a room, it can alter or define its constructional proportions, can enlarge or belittle, illuminate or obscure it; by this agency its details may be brought near to the eye or be indefinitely removed, separated or combined; if it has faults, color can conceal or exaggerate them; its columns may be lengthened or shortened, attenuated or enlarged; its ceilings may be raised or lowered, its wall surfaces extended or diminished. Decorative painting, in short, is a spirit, prodigal of good or evil, — never indifferent; it can soothe or excite, delight or offend; it can give an impression of unity and symmetry, or it can distract the eye with a contention of useless detail. With a stroke of the brush it can destroy an architectural idea, however skilfully set forth, or convert the rudest cabin into an object of art; it can render a room, however cold or bare originally, a place which the soul can inhabit with comfort and remember with delight."

An art so sensitive as this, capable of such prodigious effects, an art so "prodigal of good or evil, — *never indifferent*," — cannot be safely committed to unskilful hands. Every architectural work, whether large or small, public or private, ultimately requires for its full expression the aid of color; if not without, certainly within. This color is either constructional, i.e., made by the combination and contrast of the various materials used in building, — stones, marbles, wainscotings of various woods in their natural colors, — or applied in wall-hangings of stuffs or paper, in tiles, carpets, parquetry, stained glass, and paint; or constructional and applied color may be combined. But, however used, it is not a part of design to be subjected to caprice or whim. It should not be an after-thought or a secondary consideration, as is usually the case nor, if it is possible to avoid it, should it be considered a mere matter of convenience and furnishing, in the which one person may be regarded as good a judge as another. For, let us repeat, interior decorations are the completion of the architectural idea, and are always to be seriously considered by the architect; if neglected or under-rated by him, they will sooner or later, in indifferent hands, make his work ridiculous, will counteract or cancel his studied effects, or at least so misinterpret them that his labors as an artist will have been in vain.

To point this moral, let us now, turning from monumental examples, consider in Plate XI. a domestic subject, in which, if anywhere in such work, the lines of architecture or construction might be considered sufficient in themselves to produce a complete effect of design. This is the staircase hall of a country house lately erected. It is entered from the rear of the spectator, and is lighted by an oriel opposite on the broad landing of the stairs, as shown. This oriel is composed of four windows on the end wall looking towards the north, and one on each return wall east and west, each window having a border of stained glass, and, in a transom window over, a figure-subject in glass of rich low tones. This oriel commands a view of lake and woodland. Mirrors occupy the central bay of the oriel, corresponding with the windows; and the landing is furnished with chairs, table, and rugs, like a room. Beneath the landing is a chimney corner entirely enclosed in wainscoting, with a very wide arched fireplace in red brick, lighted on the east by a square casement and on the west by a corresponding light in a door opening on a veranda; these openings are filled with small quarries of stained glass, each containing a separate subject in outline. The hall has an open-timber roof, and the end opposite the oriel is occupied by the corridor, giving access to the principal rooms of the second floor, and is crossed by a gallery on the level of the third floor overlooking the hall. There is a panelled dado, and this, together with all the rest of the wood-work, is of black walnut; the walls are plastered, and the floors are laid with narrow strips of ash bordered with black walnut.

It will be observed that, to the guest on entering, the proper effect of this hall is endangered by the flood of light from the oriel, which naturally blinds his eyes, and in great part blots out, as it were, all the architectural details. Now, as we have already had occasion to note, a very important point to be observed in the treatment of every room is that, however rich and various its appointments may be, its general intention, the mutual relations of its principal parts, should be thoroughly understood at first view. In the study of this design, therefore, it is necessary for us to use every expedient to mitigate this confusion of light. The stained glass of course does a great deal and very effectively to accomplish this object, but the white plastered wall still remains to multiply the evil. It is evident therefore that these walls must be so covered as to absorb the rays as much as possible. To this end they must evidently be dark, — darker even than the black walnut, or else the outlines of the wood-work will not be properly relieved against it. If they are lighter than the black walnut, they will not be sufficiently absorbent; if they are not neutral in tone, they will embarrass us when we come to consider the wall-treatment of the adjoining rooms, by suggesting inconvenient and inappropriate competitions or contrasts; if the color of the walls in question is not broken by detail,



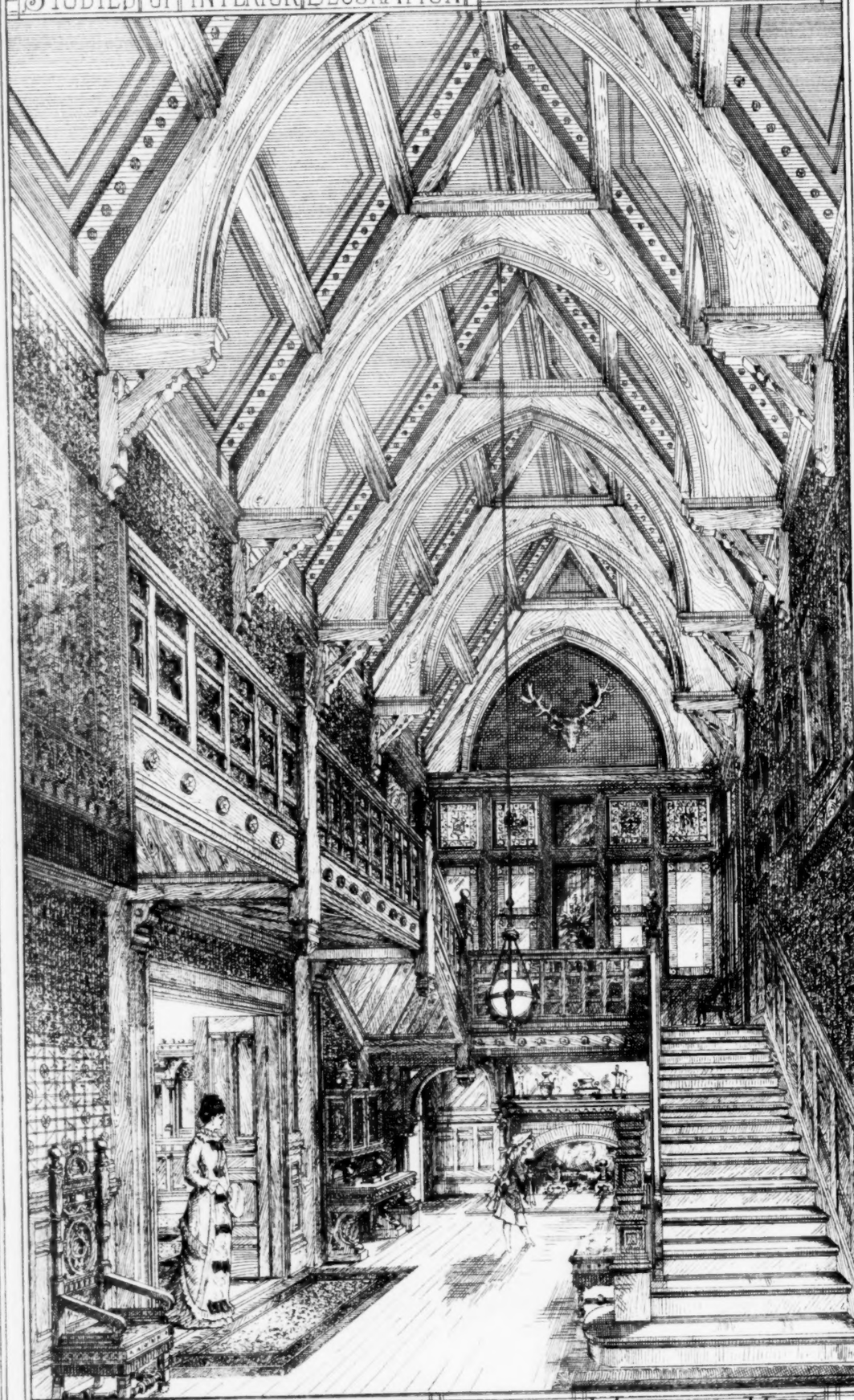


JAMES R. OSGOOD & CO. BOSTON

HELIOTYPE

TOWN HALL AT COMPIÈGNE, FRANCE

STUDIES OF INTERIOR DECORATION | PLATE XI

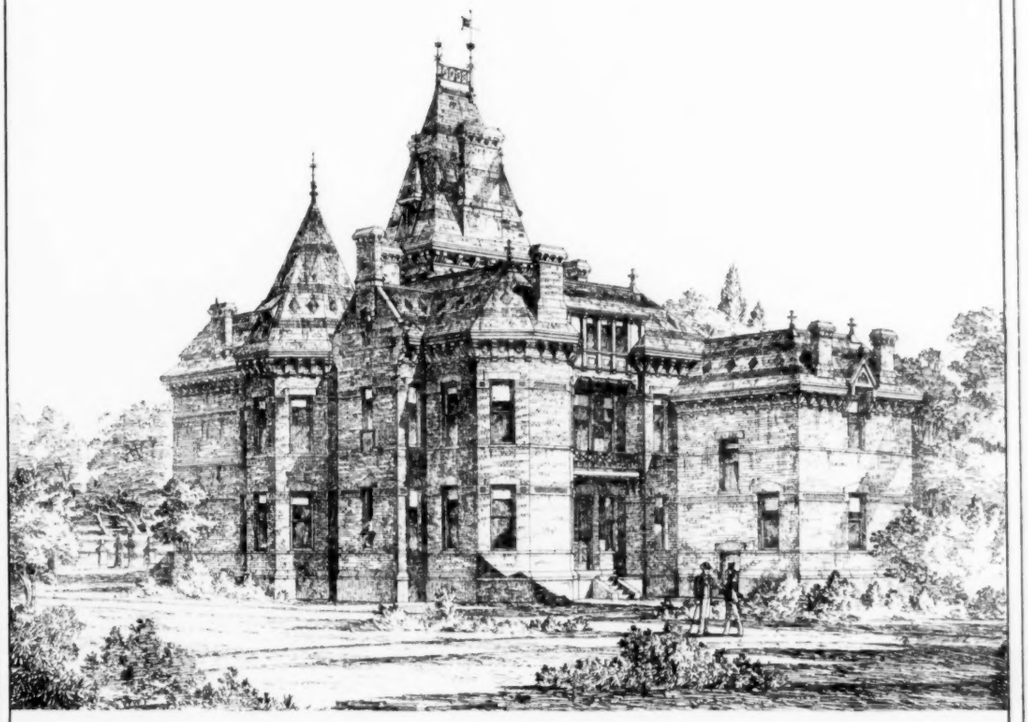


STAIRCASE HALL FOR COUNTRY HOUSE | WELLESLEY MASS

E. M. HOWE, DELR. | WARE AND VAN BRUNT, ARCHTS.

HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON



ROBERTS VILLA — XENIA O. — J. E. ANDERSON ARCHT CIN. O.

HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

they will be monotonous and oppressive, as their expanse is great; if we break them by cutting them up into large architectural panels and styles carefully adjusted to illustrate the lines of construction, this treatment will be found too formal and monumental for domestic use, and will impose inconvenient restrictions as to the hanging of pictures.

By this reasoning we discover that these walls must be very dark, very neutral, and covered with equally-distributed detail. This of course suggests a wall-paper, and the one chosen meets the conditions with a ground of positive black, overlaid with reticulations of dark olive lines crossing each other at right angles, thus forming three-inch squares; and these in turn are covered by a layer of stiff open leafage, with rosettes all in brown-red. The drawing pretends to present the comparative scale of this surface detail, but the value of it in color relative to the wood-work of the staircase and of the wainscoting, cannot of course be fairly given in black and white. This treatment, however, serves in great measure to counterbalance the glare of the oriel, and to enhance the decorations of the glass. The result is a busy richness and soberness of effect obtained by the combination of the wall treatment, as above described, with pictures, carved furniture, rugs, and *portières;* so that the main office of the hall, which is to afford a hospitable welcome, and to introduce us to other rooms, is performed in a manner not to neutralize or compete with their brighter and more lively effects.

The roof panels are painted with a greenish-olive background, like the lines in the paper, offset by styles composed of a darker tone of the same olive, enforced with black, buff, and red lines.

If in discussing this room, we have made it clear that its architectural effect is *saved* by the color-treatment of its walls, the object of introducing this illustration is attained.

THE ILLUSTRATIONS.

TOWN HALL, COMPIÈGNE, FRANCE.

THIS illustration is taken from the *Encyclopédie d'Architecture.*

The Hôtel de Ville at Compiègne, which M. Viollet-le-Duc styles "the most complete and most remarkable" of all the town-halls of France, dates from the sixteenth century. It consists of a single main building which has a grand spiral staircase, crowned by a fine belfry. On three stories large halls open to the right and left of this staircase. The large niche above the doorway is filled by an equestrian statue of Louis XII. Two projecting watch-towers flank the angles of the building, — an arrangement which was adopted for the Hôtel de Ville at Paris, which was built during the sixteenth century, and finished under Henry IV. The town-halls of the North always had a projecting balcony whence the people could be harangued; but at Compiègne this balcony is merely a little recess at the base of the belfry, at the level of the balustrade at the eaves.

ROBERTS VILLA, XENIA, O. MR. E. ANDERSON, ARCHITECT.

(160 West Fourth Street, Cincinnati, O.)

This house is built of cherry red bricks with Ohio freestone finish, and Dayton or white limestone up to the level of first floor. All the interior finish is to be of hard woods.

STUDIES OF INTERIOR DECORATION, — PLATE XI.

See article above upon this subject.

THE NEW VILLAGE SEWERAGE AT LENOX.

THE sewerage works at Lenox, Mass., to which reference has already been made in these columns, and which have been constructed under the direction of G. E. Waring, jun., sanitary engineer, Newport, R.I., have been completed and put in operation within a few weeks. So far as can now be determined, they are capitally adapted for their purpose, and are working perfectly.

Lenox is a small village whose population is considerably scattered, and is without any natural outlet for its sewerage. The only course by which the sewage could have been carried away by gravitation, and prevented from being a nuisance, would have been by cutting a deep channel through a rocky ledge and continuing the outlet some three miles to the Housatonic River, which would have involved an immense outlay.

The fund for the work was made up in part by contribution from the town, and largely by private subscription. It amounted to about fourteen thousand dollars, which would have been quite inadequate for the outlet above referred to, to say nothing of the sewers in the streets. The soil of the village is heavy, and in places quite wet. As far as surface water rain-fall is concerned there was no justifying occasion for expensive artificial works. As in the case of so many villages, all that was essential was to provide for the safe and complete removal of the liquid wastes of households.

Under these conditions, — the usual conditions of country villages and small towns, — it was determined to furnish sewerage accommodation for the liquid house-wastes only, carrying to the sewers such roof-water from churches and other buildings as would serve for their complete flushing. The fall of the sewers is in all cases such that six-inch pipes have ample capacity for the service required; and all of the sewers, including the main outlet, are of this size. They are made of Akron pipe, well provided with gaskets, and thoroughly cemented. As the village is amply supplied with water, it is intended to flush the sewers from time to time by a four-inch hose inserted into them at points near the fire-plugs. There are frequent man-holes with ventilating covers. The general depth of the sewers is five feet below the level of the streets, which gives sufficient drainage to the basements of all houses. As a means for relieving the soil of undue moisture, a common land drain is laid at the side of the sewer-pipe at the bottom of the same trench, — these land drains being at proper intervals turned into the sewer. Thus the soil-drainage water aids in keeping the sewers clean, and the sewers furnish an ample outlet for this at all times.

That which makes this system chiefly worthy of notice is the means adopted for the final disposal of the sewage. As before stated, there is no good natural outlet by which it may be discharged into a running stream. To have carried it to a point where it could be used for surface irrigation without the suggestion of objection to residents, would have been expensive and difficult.

To meet the requirements of the case, the "flush-tank" invented by Mr. Rogers Fields, an English engineer, and the system of sub-irrigation pipes suggested by the Rev. Henry Moule, the inventor of the earth-closet, have been applied on a scale commensurate with the needs of the case, — a much larger scale than has been adopted heretofore either here or abroad.

Simply stated, the arrangement is as follows: —

The sewage is discharged into an underground reservoir or tank, having a capacity of about four thousand gallons. The outlet to this tank is by means of a siphon so arranged that it shall come into action automatically whenever the tank is filled. The discharge through this siphon is very rapid, — the whole tank containing more than a day's supply being emptied in less than thirty minutes. Being empty, air enters the siphon, and there is no further discharge until the tank is again filled. The discharged liquid is delivered into a series of underground lines of common land drain pipes, with uncemented joints, having an aggregate length of ten thousand feet and lying twelve inches below the surface. The liquid discharge from the tank flows rapidly into these, and is nearly sufficient to fill them. It soon leaks out at the joints, and is absorbed by the soil, which retains its organic matter until oxidized and appropriated by the roots of grass.

As a precaution for use during repairs, or in the event of the absorption drains being obstructed by frost, arrangements are made for diverting the flow, and delivering it temporarily on the surface of the ground. In like manner, should it become necessary, the flow from the village itself may be turned directly on to the surface. In either case the surface flow is received in a horizontal irrigation gutter, which will serve to spread it over the whole field occupied by the absorption drains, — about 1½ acres.

It may be of some interest to village authorities to know that while any system of natural outflow that could have been adopted would have brought the cost of the work to over $20,000, the cost of the Lenox work with all its appurtenances has been less than $10,000.

LIGHTNING PROTECTION.

THIS book has been compiled to advertise a device for the ground end of a lightning-rod.

It has a certain air of being a treatise, which we understand to be a systematic arrangement of known truths; but the original material employed to lace this patchwork together is full of error. The reader ought not, in acquiring useful information on the subject of lightning-rods, to be exposed to the danger of imbibing vagaries in meteorological science, — or in any other. What excuse can there be for speaking of "the *subterranean water-bed,*" as if the globe were a shell, and universal water were a layer at no great distance within?

What does the author mean by saying that "silent electric discharges between the air and earth are capable of *forming nitrogen,* which is essential to the growth of vegetation and plants" (*sic*)? or, that "ozone is air holding a double portion of oxygen in its composition"?

Despite all this, and much more of the sort which the book before us contains, it may fairly be said to state, in a way to interest the reader, the general doctrines of electricity as applicable to house protection from lightning. It clears away (and this is a service entitled to thanks), a good deal of mystery which lightning-rod men have helped to make needlessly dark. The substance of the book may be summed up in the following propositions: —

1st, That glass insulators are unnecessary, and gilding or silvering the tips of the rods does not improve their serviceability.

2d, That the round bar or rod of iron designed by Dr. Franklin is as good a lightning-conductor as any of the copper or composite rods of modern introduction.

[1] A Practical Treatise on Lightning Protection, by Henry W. Spang. Published by Claxton, Remsen, & Haffelfinger, Philadelphia, 1877.

3d, That the area of protection of the lightning-rod at the surface of the earth will be swept by a radius equal to about one and a half times the height of the tip of the lightning-rod above the ground.

4th, That the rod should communicate with moist earth; and that this may be conveniently effected by driving to adequate depth a perforated iron water-pipe, which is connected with the lower end of the lightning-rod, into the soil where the water from the rain pipe discharging from the eaves-trough is received, and soaks away into the ground.

In the matter of this perforated iron tube or hollow prolongation of the lightning-rod to permanently moist earth, the author thinks an improvement has been made, and it seems reasonable.

The tube will facilitate the absorption of the gathered water from the eaves-trough, and, by conducting it to depths from which it will not so readily escape by evaporation, will prolong the continuance of a wet column of earth.

MORE BRIBERY.

[The following letter, which explains itself, has been forwarded to us for publication. We are greatly surprised that such a letter should come from the quarter it does. The profession would be glad to know, and so would their clients, we fancy, by what authority Messrs. Cornelius & Co. speak of a "usual commission" on orders received through architects.]

PHILADELPHIA, June 29, 1877.

—— ——, *Esq., Architect.*

Dear Sir, — We take the liberty to write you requesting information concerning the completion of the fine residence you are building for a gentleman in ——. It will afford us pleasure to furnish you with special designs in gas-fixtures for the above, or for any other buildings you may have in hand. We have a very fine line of the Eastlake polished brass patterns, also polished brass and majolica, and have recently furnished some of the very finest residences and public buildings in the country. We will allow you the usual commission of ten per cent on all orders received through architects.

Yours truly,

CORNELIUS & CO., *per Patterson.*

CORRESPONDENCE.

QUARTERLY REPORT OF THE SUPERINTENDENT OF BUILDINGS. — WORK IN THE OFFICES.

NEW YORK.

THE report from the building department for the quarter ending June 30 tells a tale of great reduction as compared with the corresponding quarter last year. The figures are based upon the estimated cost of the proposed buildings, such estimates of cost being made by the architect or owner, and accepted by the department. While some may under-estimate, the tendency in all building operations to overrun the estimates will make the figures fairly representative of the actual outlay. The number of plans offered for inspection during the quarter was 276, embracing a total of 495 separate buildings. Of the plans 241 were approved on first examination, 14 were sent back for amendment and subsequently passed, and 21 were rejected outright. The estimated cost of the projected buildings was $5,438,875. During the quarter 499 new buildings were commenced, and 331 completed; and there were in progress in the city on the closing day of the quarter, 788 buildings.

In the matter of alterations there have been some important changes made. The number of plans submitted was 425, affecting 451 buildings. Of the plans 366 were passed, 42 sent back for amendment and then approved; and 27 were rejected as, in the opinion of the officers, unwise changes. The estimated cost of the alterations was $1,194,981. There have been 457 works of alterations commenced and 468 completed during the three months, leaving at present 283 works of this class in progress. Putting the totals for the two classes of work together, we have a total of $6,628,856 for the building operations of the past quarter, against a total of $9,681,123 for the corresponding quarter of 1876, a falling off of nearly one-third. There have been plans for few public buildings filed.

The bureau of iron construction, charged with the testing of ironwork for buildings, reports that 188 iron beams, 134 arch girders, and 41 iron lintels have been placed under the testing-machine, and all were approved. Twenty-two unsafe and dilapidated buildings have been removed by orders of the superintendent.

Among the architects no great or specially noteworthy works seem to be in hand. G. B. Post has a tenement which, except in plan, differs little from a thousand other human packing-houses in the metropolis. Instead of entering directly to the house at one central entrance, a pair of staircases — one well back and the other near the front — open on a court-yard six feet wide, running up the side of the lot. This leaves the front for stores, excepting the four-foot passage opening on the court. The lot is as usual 25′ x 100′. In reality it is a tenement set endwise; and the court-yard is nothing more than an open air space, into which almost every room in the house can open. There are four sets of apartments (three rooms each) on a floor.

Emlen G. Littell has a little convent building, to stand on 17th Street, near St. George's Church. It is for the Sisters of St. John, an Episcopal offshoot from the Clewer sisterhood of England. The lot is 50′ x 104′. On the front portion, extending back about 65 feet, the four-story residence will stand, in pressed brick, red joints, with wrought work of Newark stone, with the least possible amount of ornament, a mere chamfering of the window-jambs being all that is done in that direction. There will be a stone porch, with a pair of Amherst stone columns, while in the triangular transom light over the entrance, cathedral glass will be set. Running back from the building, the chapel will extend to the rear of the lot. It will accommodate about 80 worshippers beside the sisters, who will occupy the choir, extending fully half way up the chapel. The entire cost is limited to $25,000. Mr. Littell is also building a house for J. L. Lee, at Stoutsberg, on the Hudson, in native blue stone, with wrought work of Newark stone and Amherst stone porch columns. The piazza-roof will be carried as well on piers one foot square. The windows will be finished in plain cathedral glass; and within there is much that is novel, the hall, for instance, showing the beams above, open to the ceiling under the floor of the next story. The house, which measures 50′ x 60′, will cost some $25,000.

Douglass Smyth is working up a little court-house in brick, for Warren County, N.J., to cost, complete, about $30,000. George E. Harney is doing some of his careful work on a brick and stone shop front for the new Starr and Marcus jewelry firm, but the design is not yet ready for inspection or description. The Jardine Brothers are busily at work. Their recent works include an apartment house at 54th Street and Broadway, in brick and stone; on the whole, a flat of a superior class, 40 by 60 feet, and five stories high, to cost $23,000. A showy store at 47th Street and Broadway, 43′ x 60′, left in plain lofts, with front in brick and Amherst stone, and costing $16,000. For Christ Church, at Rye, N.Y., they will put up a wooden parsonage: it is in the Queen Anne style, 45 feet by 40′ in plan. For Dr. Taylor's church in this city, they will make a new exit by cutting away the sill and wall beneath of the extreme east window, and putting in a low porch in wood. The tracery of the window-head will be left, and will show above the porch roof. A two-storied planter's mansion for San Antonio, Tex., is also coming from the Jardine atelier. Its heavy stone walls, wide halls, and extended balconies, indicate its *locale* as a land of sun and heat.

The old post office, the site of which the Chamber of Commerce was so anxious to secure, that they might proceed with the erection of a grand maritime exchange building, is destined to a still longer lease of life in its present dilapidated form. William F. Bailey has leased the whole, and will convert it into stores. In changing the old building into business places, many alterations will be made in the interior; but the exterior will remain as it is, barring a coat of paint and the transformation of its old windows into the modern shop show-window.

FIRE-PROOF FLOORING.

ON pp. 299 and 308, *American Architect and Building News*, vol. i., we described the method of constructing fire-proof floors in Vienna. In further illustration of this method, we reproduce a portion of the letter to the *Builder*, in which Mr. Ladislas Vidéky, a royal Hungarian engineer attached to the Metropolitan Board of Works at Buda Pest, comments on the experiment lately made in London to test Messrs. Evarts and Swain's method of constructing fire-proof floors, an account of which we lately published.

He says of the method of construction followed in his own country: —

"We lay the flooring in this way: Round beams of about ten inches to eleven inches in diameter are sawn through in two halves, longitudinally of course, and the sides are partly hewn vertical. These timbers or beams are laid close to each other, and the spikes applied to them diagonally, the spikes having no other purpose than to unite all the joists for bearing equally the weight laid on them. The plaster is then applied in this way: Dry reeds are laid vertically to the length of the beams, and fixed to them by wire and nails in such a manner that there should be a small space left between each stem of reed. If the reeds are not long enough to reach from one end to the other of the ceiling, they must at the joining ends overlap for at least twelve inches, and be fastened by additional wires. The plaster laid on this rough surface is a mixture of common plaster and plaster of Paris, or cement, and has a final layer of stucco.

"We here place on the joists a layer of rubbish or refuse from the smelting furnaces, four inches to five inches thick, and apply the planking or parquets on the top of this layer, by first embedding into it three-inch by three-inch scantlings.

"This flooring, if made of well-seasoned timber, and with proper care, will last centuries, and resist the attack of flames for a very considerable time. In fact, we have here very rarely a case of fire where the floorings are burnt out. Usually only the roof is burnt

off, and the ceiling of the last upper floor damaged by water. It must be noted that we make this last ceiling exactly in the same manner as the other floorings, with the only difference that it is not timbered over with planks, but either a layer of stiff clay is laid on, or it is paved with flat tiles, and that there is also left a space of at least six inches between this top and the joists of the roofing structure.

"As to building stairs with timber, we have found that it is impossible to make them fire-proof; not that the wood-work could not be protected against rapid ignition, but because the danger lies in the inevitable twisting and bending of slight woodwork in great heat, which circumstance renders every protective covering nugatory. The law therefore here is, that all communication between the apartments and the street-door must be built of incombustible material; that is to say, that all the corridors, passages, and stairs must be built of bricks, stone, or iron, and vaulted in with brick-work.

"I wish to say now a few words as to the drawbacks of this structure. In the first instance it must be stated that very wide spans cannot be floored over conveniently with this system, because this would require the strengthening of the wall to a very extravagant extent; the timbers require a certain amount of space for support on the wall. Let it be here remarked that it is unsafe to lay the timbers into the thickness of the wall. This space cannot be less than three inches, but if the span to be floored over is more than twenty feet, the support space must be increased proportionately, or the floor must be supported by pillars. Whatever contrivances may be applied for the better support of the floor-timbers, it must always be borne in mind that ultimately it is always the wall which has to carry safely the whole weight and vibration of the structure and the incidental burden, and consequently there must be a corresponding strengthening of walls.

"Great care must be taken to protect the ends of the beams against decaying. This is not an easy task to accomplish, as these ends are the very Achilles-heel of the whole structure.

"But after all it is very questionable whether all the advantages of this sort of flooring could not be secured by a judicious modification of the ordinary joist and scantling floor, which at any rate is much lighter, and therefore does not require such heavy walls as the close-timbered floor. Supposing the ordinary joist flooring to have underneath a planking with the same sort of reed and stucco cover as our flooring, and to have on the top of the upper planking a layer of rubbish, upon which the floor-planks or parquets are laid, would not that do the same service as far as fire-proof requirements are in question? I certainly should say *yes*. We have many houses built here in this way, and they have behaved during fires just as well as the close-timbered houses; but, strange to say, we have again reverted to the old method of close-timbered floors, in consequence of the greater cheapness of the latter, and partly also because the close-timbered floors are capable of supporting safely a greater weight and motion without so much vibration as the joist-floors."

Mr. W. H. Cozens Hardy writes to the *Times* from Letheringsett Hall, Norfolk, as follows: viz., "Having had a considerable fire on my premises some years ago, I was much interested in the account you published some weeks back of the fire-proof flooring designed by Messrs. Evans and Swain. I have a large malt-house, 40 ft. by 180 ft., which was built about the year 1824, over which is a chamber of the same size for storing barley and malt. The floor was made without any joists; and having resisted the ravages of a large fire on the 1st of April, 1827, it may interest your architectural readers to learn how it was constructed. The building is 40 ft. wide; and strong beams, six inches by fifteen inches, were placed on the brick walls, seven feet apart, each beam being supported by two wrought-iron columns; upon these beams three-inch deals, grooved and tongued, were fastened without any joists. The fire originated in this building, from the spontaneous ignition of high-dried malt, and in less than an hour the whole roof fell upon this floor. Some time elapsed before a fire-engine could be obtained. At length the fire was got under, but continued to burn for some twenty-four hours afterwards. To my astonishment, none of the beams were destroyed, and the floor was scarcely at all injured (only about a dozen small holes having been burnt through); and the floor exists at the present time as strong as it was fifty years ago. I may observe that this floor, though somewhat moist in its construction, was simply made for strength, and without any idea of its being less liable to be destroyed by fire than ordinary floors. I am quite certain that the safety of this floor arose entirely from the three-inch deals being grooved and tongued, thus preventing the air from getting between the joints, and feeding the flames. If a floor on this principle were made with a double thickness of three-inch deals, tongued with hoop-iron, one above the beams, and the other under, with concrete between, and with a ceiling of thick plaster, as suggested by Messrs. Evans and Swain, I have no doubt it would resist the action of fire much longer than so-called fire-proof buildings, and the cost would be very trifling. I shall be happy to show my malt-house to any one who may wish it."

ST. MARK'S. — Mr. Ruskin is at Venice, making a water-color drawing of St. Mark's.

PORTLAND CEMENT.

MR. G. F. DEACON, the Borough Surveyor of Liverpool, has published a paper on Portland cement, which he read some time back before the Liverpool Polytechnic Society. As it contains records of trustworthy experiments, it will be found to form a valuable supplement to the well-known papers on the same subject by Mr. Grant, of the Metropolitan Board of Works. Mr. Deacon was not satisfied with the kind of block which was devised by Mr. Grant as the best in form for testing the tensile strength of cement, and which has since then been commonly adopted in experiments, — that is, a block with square sides, except in the central part, to which the test was supposed to be applied, and where for about one-fifth of the length of the block the form suddenly became concave. It seemed to him that "unless the cement throughout the fractured section were perfectly homogeneous, it was highly probable that one or both of the parts immediately adjoining the shoulders where fracture commenced would have a density differing more or less from the mean density." Accordingly Mr. Deacon had made a test block, which was also of less section in the middle than at the ends, but was without corners or sharp curves in any part. More than five hundred experiments were tried with the same cement formed in both kinds of blocks; and it was found that while a block of the London pattern would indicate a breaking weight of 647 pounds for a section of $2\frac{1}{4}$ square inches, and seven days after gauging, the Liverpool block would give a strength of 753 pounds or an additional strength of nearly 16 per cent. From this it becomes plain that it is not sufficient in specifications to prescribe a certain degree of strength as requisite for Portland cement unless the form of the test block is likewise stipulated. The standard specified by the Metropolitan Board of Works is 787 pounds on the sectional area of $2\frac{1}{4}$ inches, or 350 pounds to the square inch; but with his new block of the same area Mr. Deacon specifies the tensile strength at not less than 800 pounds per square inch, and the average strength of the cement supplied during a year amounted to 871 pounds. For ascertaining the transverse strength of Portland cement, Mr. Deacon suggests the following specifications: "Samples of pure cement shall be gauged with water, and pressed into a mould 10 inches by $1\frac{1}{2}$ inch by $1\frac{1}{2}$ inch. The block of cement thus formed shall be placed in water, and, after seven days, tested by placing it on supports $9\frac{1}{2}$ inches apart, and gradually applying a load of 150 pounds on its centre. If more than one out of three blocks are broken within one minute of the application of the load, the engineer or architect shall be empowered to reject the whole of the cement from which the samples were taken."

The following is the specification for Portland cement which is adopted in Mr. Deacon's office: The cement must be of uniform quality, and capable of bearing the following tests to the satisfaction of the engineer: 1. Samples of the cement, being sifted through a No. 50 gauge wire sieve, must not leave a residue of more than 10 per cent. 2. Samples of pure cement will be gauged with water and placed in the brass moulds used by the Corporation. Within twenty-four hours the casts thus made will be immersed in still water, in which they will remain until the expiration of seven days from the date of moulding, when they will be taken out of water and tested to ascertain their tensile strength, which must not be less than 800 pounds on the sectional area of $2\frac{1}{4}$ square inches. 3. In ordering the cement it will be distinguished as quick setting or slow setting. The slow setting cement, when gauged neat in the moulds, must not become firm in less than three hours. The quick setting cement must assume a firm condition within half an hour. The test for firmness will be that of resistance to the finger-nail, the test at present adopted in the department. The above tests will be applied after each delivery; and should the result be unsatisfactory to the engineer, he may — having given notice to that effect to the contractor within eleven days of delivery — require the whole of such cement to be removed at the contractor's expense. With each delivery the contractor shall send a memorandum of the quantity delivered, and the name of the manufacturer. — *The Architect.*

NOTES AND CLIPPINGS.

BAD WALL, NOT BAD GROUND. — Chief Inspector Robert McGinniss of the Building Department has prepared a special report covering the accident to the buildings in East Twenty-Third Street, New York, where the brick party-wall between two tenements suddenly dropped some six feet, completely wrecking the adjoining buildings. The report sets aside the theory that the mishap was due to a sinking of the underlying soil, and considers that it was due entirely to defective workmanship in the stone foundation wall. The soil was found to be a good hard-pan, and was compact enough to carry any building in the city.

FAILURE OF A RESERVOIR. — About 3.30 o'clock Sunday afternoon, July 8, the new reservoir at Athol, Mass., on a hill 250 feet above the main village, into which a large volume of water had just been emptied, gave way beneath the pressure. The flood carried away several mill-dams, and caused more or less damage to other mill property on the banks. The reservoir was built by contract, and was accepted by the town on the day before.

NEW STATE PRISON FOR NEW HAMPSHIRE. — The bill providing for a new state prison has passed the House by a vote of 214 to 105.

THE THOMAS CONCERT GARDEN. — It is said that the projectors of the Thomas Music Hall are disappointed at the result of the invitation for subscriptions. Only $180,000 has been pledged, while $250,000 is necessary to begin the work. A renewed attempt to enlist popular interest will soon be made.

INSECURE BUILDINGS. — Building Inspector Shaw ordered taken down last week, as being unsafe because of the settling of foundations and cracking of walls, the block of six brick houses on Ruggles Street, corner of Westminster, Boston. The buildings were at one time moved back, had new foundations built under them, and were again brought forward to the street.

INCENDIARISM. — An incendiary attempt was made to burn Trinity Church, Boston, on July 13.

A CLAIM ALLOWED. — Mr. M. Clements, proprietor of the "Architectural Iron Works" of Cincinnati, O., has had his case against the State of North Carolina decided in his favor. The case briefly stated is this: In 1871 plaintiff entered into a contract with defendant to furnish all the iron-work necessary for the State prison. Iron at that time was much higher than it is now, or was when they were ready for the iron-work. Plaintiff had already got out part of the work when defendant through its legislature annulled the contract, and had the work done in accordance with the lower price of iron; whereupon plaintiff brings action to recover the amount of his profits on the work, together with the amount of work done, and after the usual "law's delays" gets a final judgment (from which there is no appeal) of $20,000. This amount is not all that was asked for, but nearly so.

THE LIFE-SAVING SERVICE. — The statistics of wrecks which have occurred within the range of the Life-saving Service during the last fiscal year have just been published by the Treasury Department, and show that the number of vessels driven ashore during the year was 120, and that they had on board 1,253 persons. Of these 1,214 were saved, and 39 lost. The estimated value of the vessels wrecked was $1,746,464, and of their cargoes $1,348,876, making a total valuation of $3,095,331. The whole amount of property saved, so far as reported, was $1,554,505, and of that lost $1,053,826, leaving $487,000 not yet ascertained whether saved or lost. At fifty of the disasters, the Life-saving Service apparatus was successfully used, and 838 persons were rescued by it.

MALARIA AT WASHINGTON. — An epidemic of malaria is said to have broken out in Washington, of so violent a type that people are taken sick with nausea and vomiting in the streets. It is attributed to the removal of the rotten wooden pavement, and the general upturning of the soil of the streets while re-paving the city.

SAND FOUNDATIONS. — It is said that the walls and iron columns of the Cooper Institute, New York, rest upon nothing but sand for a foundation, although they have to support a fire-proof structure one hundred feet high above the sidewalk. Although the building is some twenty years old, it has shown no signs of settling.

THE LARGEST RAILWAY STATION IN THE WORLD. — The new railway station at York, Eng., said to be the largest in the world, was opened on the 25th ult. It is not a terminal station, so trains will run straight through it. The length of the platform is to be 1,500 feet, while the covered portion of the station is in length 800 feet, and in breadth 234 feet. The height is about 50 feet. The superficial area of the platform at York is 171,951 feet, and that at St. Pancras, London, 165,360 feet. The roof consists of four semicircular spans, the largest of which is that in the north centre, which is 81 feet wide, and covers four lines of rails. That springing from the north wall is 55 feet wide, and covers a platform and three sets of rails.

THE PROPOSED MONUMENTAL PULPIT FOR ST. PAUL'S. — It appears that the proposal made some time ago on the part of some workmen in Paris to place a pulpit in St. Paul's, as a proof of international sympathy, is not likely to be carried out, after all. The Lord Mayor has lately received communications from Paris, which show that the project was due to the friendly feeling and enthusiasm of M. Mignot, who originally wrote to the Lord Mayor on behalf of the Association of Working Carpenters and Joiners in Paris, but who has since been disavowed by his colleagues. M. Mignot has made a second proposal to organize a general subscription in Paris for his original scheme. To this, however, the Dean and Chapter of St. Paul's felt an objection, which will be generally shared by their countrymen.

CLEOPATRA'S NEEDLE. — In preparing to move the obelisk at Alexandria, two inscriptions have been found upon it, — one in Latin, the other in Greek. They fix as the year of its erection at Alexandria, by Barbarus, prefect of Egypt, the eighth year of Augustus Cæsar's reign. Fontius, the engineer, did it.

ACCIDENT TO THE TAY BRIDGE. — Towards the end of June another large truss weighing twenty-four tons fell, causing death. This accident raised to twenty the number of deaths which have been caused by accidents during the construction of this bridge. It is expected that the first train will cross the river on the 15th of September.

THE SPECIFIC GRAVITY OF WOODS. — The woods which are heavier than water are Dutch box, Indian cedar, ebony, lignum-vitæ, mahogany, heart of oak, pomegranate, vine. Lignum-vitæ is one-third heavier, pomegranate rather more. On the other hand, cork having a specific gravity of .24, and poplar, .383, are the lightest woody products.

GERMAN BRICKS. — German bricks measure 6.5 cm. (2.55″) x 1.2 cm. (4.71″) x 25 cm. (9.82″).

CREMATION. — The municipality of Paris have resolved to petition for a law permitting cremation.

FLOODING THE SAHARA. — The French physicists are not quite so certain about the advantage of flooding the Desert of Sahara as they used to be. M. Naudin does not hesitate to say that the proposed sea would probably be a huge pestilential focus. In the rainy season the waters would extend a great distance over the flat shores; and in the dry season the waters would recede, leaving exposed a damp area, favorable for the production, under a tropical sun, of organisms which would putrefy and vitiate the atmosphere all around.

MONUMENT TO THE DUKE OF GENOA. — A monument to the Duke of Genoa — the brother of Victor Emanuel, and father of the Princess Margaret, who married her cousin, Prince Humbert — was unveiled recently at Turin. It is an equestrian statue, representing the Duke at the battle of Novara, just as his third horse is killed under him. This prince, who bore an active part in the battles of that period, died young in 1855, but left a glorious record behind him.

ULM CATHEDRAL. — The corner-stone of Ulm Cathedral, which, to use a local expression, was to serve as a jacket for the cathedral at Strasbourg, was laid in 1377, when, because of the increasing trouble between the citizens of the Free Cities and the feudal nobles, the citizens felt the need of having the principal church within their own walls. Until the Restoration put an end to some of the sources of income as well as to the interest of the inhabitants in the work, the building had made good progress. For four centuries and a half the cathedral remained unfinished and gradually falling into bad repair, until, stimulated by the exertions that were making to repair Cologne Cathedral (the only cathedral in Germany which is larger than that of Ulm), in 1840 work was again begun upon it. During the month of June, the fifth centennial anniversary of its foundation was celebrated. At that time, the restorers had completed all the flying buttresses, and had so assured the safety of the nave. The southern bell-tower is nearly finished, and the northern tower will be finished in a few years. If the revenues — derived in great part as at Cologne from a regularly-established yearly lottery — continue good during the next ten years, work on the main tower will be undertaken, and the whole building finished. Work upon this tower was stopped in 1492, because two of the pillars under it gave way. Had it been finished according to the original design, it would have been 491 feet high.

PAPER IN CENTRAL ASIA. — Nearly all the paper which is used in Central Asia is manufactured at Khokand and at Tcharku, a little village in the khanate of Khokand. The process of making it is rude and slow, yet interesting as a hint of the achievements of the native Asiatics in the industrial arts. We extract an account from the works of Schuyler on Turkistan: "The rags are alternately pounded and macerated until they are reduced to a thick pulp, which is then collected into a round ball. Portions of this are then placed in a tub of water and well mixed together. The paper-maker takes an oblong sieve, made of thin grass stretched over a wooden frame, and puts into it a quantity of the pulp, shaking and inclining it until it is equally distributed over the surface. After allowing it to stand for a few moments, he turns it out on a board. In this way one man can make about 300 leaves per day, which are placed one on the other, with layers of felt between, and submitted to a heavy pressure to squeeze out the moisture. In the morning they are taken out and hung for drying on a wall exposed to the south. The sizing and polishing are done in the bazaar, by a different set of workmen. The size usually employed is a kind of dextrine found in the roots of the shirash, a plant of the lily family; and the polishing is made by a smooth, heavy stone. By this process the value of the paper is nearly doubled (from ten to thirteen or twenty cents a sheet). Imperfect paper is, however, never thrown away; for at the time of sizing, holes or fissures are patched up with their strips, and the surface is made so even that the defects can only be discovered by holding the sheets up to the light. The paper, which is usually gray, although sometimes colored pink and blue, is very tough and firm, and excellent for the gummy ink with which the natives write. For the purposes of the Europeans it is of little use, and the Russians have to import all the paper they require."

ELECTRIC PLANT. — The *Gazette Horticole de Nicaragua* publishes some information respecting a plant of the family of *phytolaccas*, which grows in that country, and which possesses electro-magnetic properties. When a branch is cut off, the hand holding it experiences an electric sensation similar to that received from a Rumkorff battery; and the electrical influence of the plant has been observed several paces from the plant by the deviation of the needle of a small compass. When the compass was placed by the experimenter close to the plants, the needle turned completely round. The soil is said by the *Moniteur Industriel* to contain no trace of iron or other magnetic metals, so that the property is inherent in the plant itself. The intensity of the phenomenon varies with the hour of the day. At night it is almost *nil*, and most intense during the two midday hours or in a wind; during rain it was weak. No birds or insects have been seen to rest upon the *phytolacca electrica*.

A CHANCE FOR THE HEMLOCK TREES. — Hemlock lumber is gradually growing scarcer in New York, especially in Warren County. A barrel of tannin extract is produced from a cord of the bark, the value of which is $20.00. A cord of alder, it is now found, will yield the same amount; while a ton of sweet fern gives $22.00 worth of the best tannin, and $7.50 of an inferior kind. In Maine the industry of extracting tannin from ferns has already attained considerable dimensions.

OLD AND NEW. — Sir Gilbert Scott, during an examination before a committee of the House of Commons, said that it was his opinion that people did not complain of old buildings, but only of new ones.